G3 Display/remote

006-00001GF

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IMPORTANT INFORMATION

This User-Manual serves a guideline for safe and effective operation, installation of equipment and equipment maintenance. Please read the manual thoroughly before starting installation and operation with the G3 Display.

Exclusion of liability

Clayton Power shall in no event be liable for any direct or indirect loss, damages or costs arising from use of this Clayton Power product, or in any way connected with faulty installation, improper operation or incorrect utilization and maintenance.

Clayton Power shall in no event be liable for any direct or indirect damages, disablement or death on persons who

- works with or are dependent on Clayton Power products.
- are connected to medical equipment or to any life support system, where Clayton Power products is integrated as a component.

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Revision History

2013-01-31: Initial release.

In the box

1x G3 display
1x 7-pole data cable (5m)
1x G3 Display manual

Environment

- The display must be placed in a dry, well ventilated and dust free location.
- Place the unit within 5 meters of the battery.
- Make sure that water or dust cannot enter the cabinet.
- Avoid mounting the device next to flammable materials.

Mounting

- The unit is to be mounted within a casing or mounting hole prepared for the device (4 x Ø4.5mm holes – See G3 outline drawing).
- Make sure that each wire and connector is connected in according to the set-up guide.
- During wiring, use standard cable fixtures and connectors. Do not bent the wires extremely and avoid sharp edges to prevent the isolation of the wires from cutting and abrasion.

Cleaning

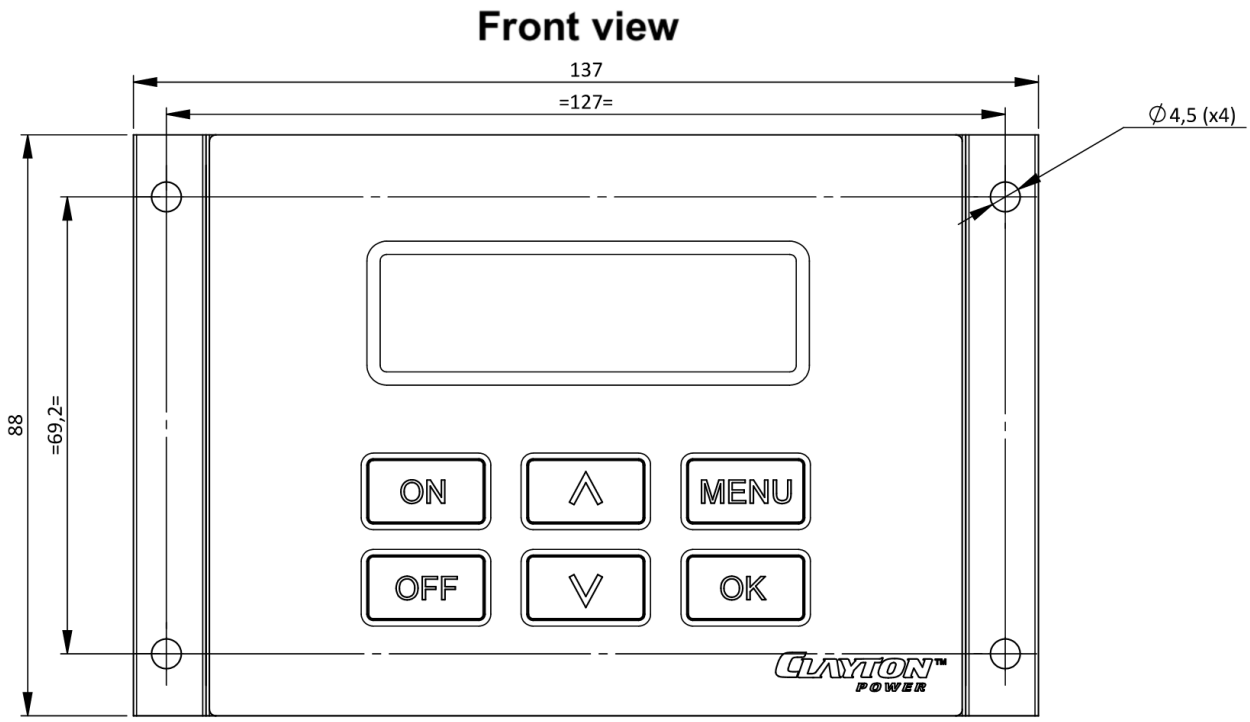
- Front can be wiped with a damp cloth for cleaning purposes.

Functions

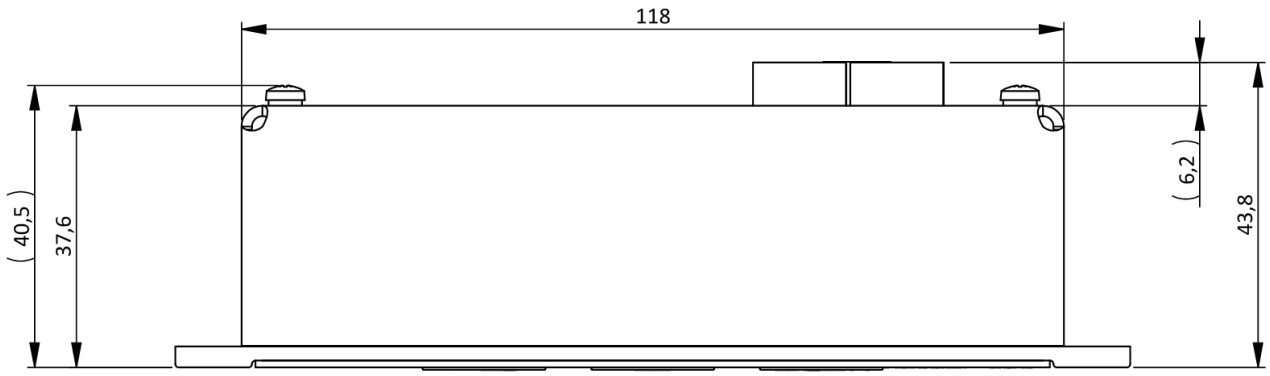
G3 Display provides following features:

- ✓ Battery voltage measurement
- ✓ Remote control of connected G3 unit(s)
- ✓ Remote and manual control of generator
- ✓ G3 status information
- ✓ Display of battery current
- ✓ Display of inverter power
- ✓ Manual control of Boost charge
- ✓ Handles up to six G3 units

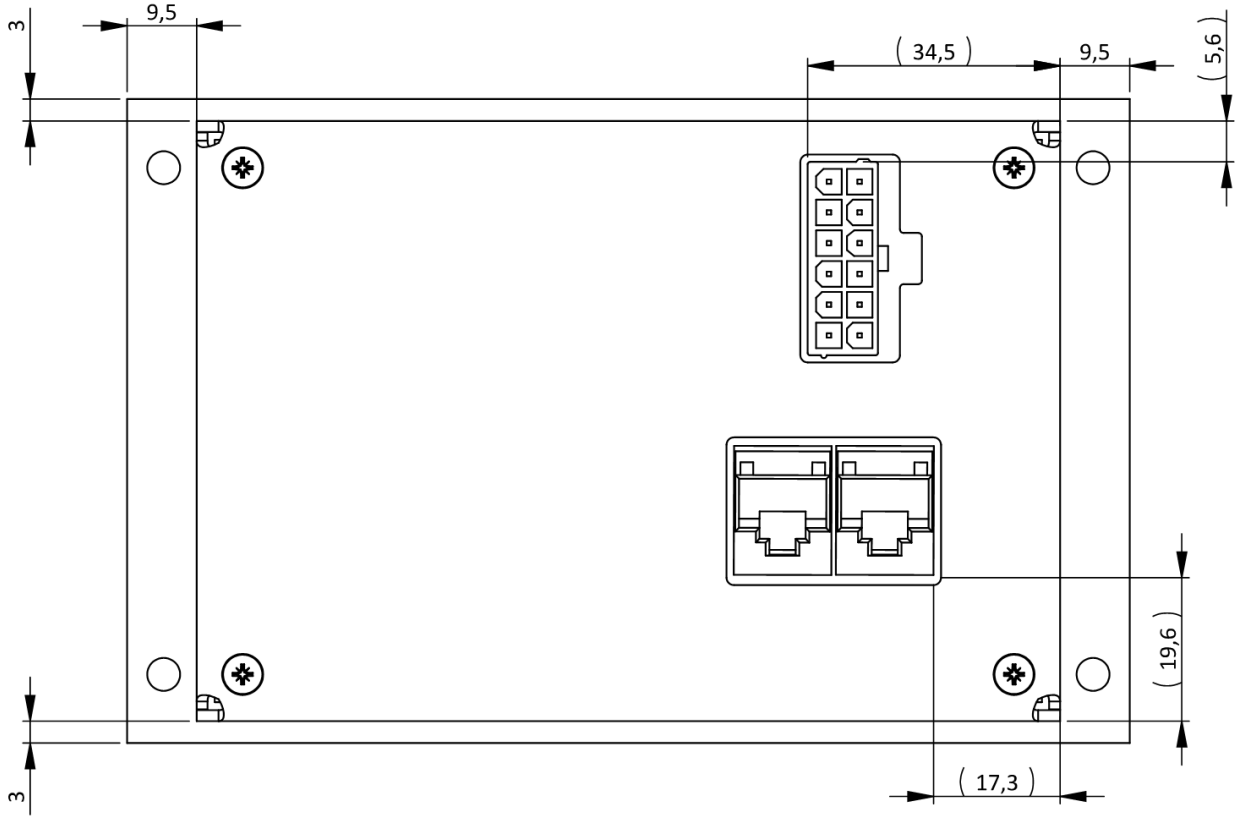
G3 display outline drawing



Top view



Back view



Start-up Guide

Following products are used as reference in this manual:

G3 Display

G3 Inverter/charger

Or

G3 Inverter

Battery

The diagram below shows a basic wiring setup using a G3 Display, 12VDC - 100Ah Lithium Battery and a G3 Combi (Inverter/Charger).

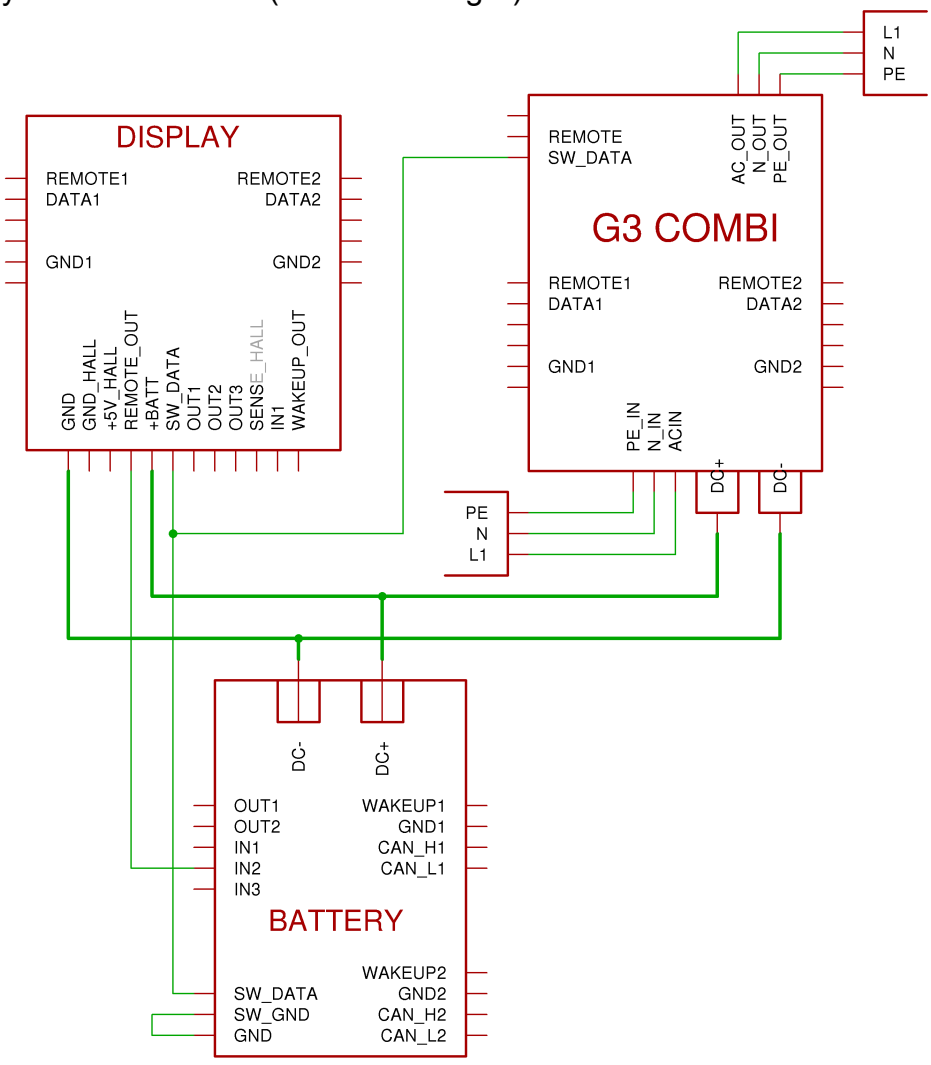


Figure 1 Basic system setup

Setting up the basic system

1. Connect the white wire to from the G3 Display cable to *input 2* in the Lithium Battery using the 5 pin terminal connector.

2. Connect the CP SingleWire between the G3 Display cable, the Lithium Battery and the G3 Inverter/Charger using the green wire from the Display cable and an extra piece of wire (not supplied) between the G3 Inverter/Charger and the Lithium Battery.

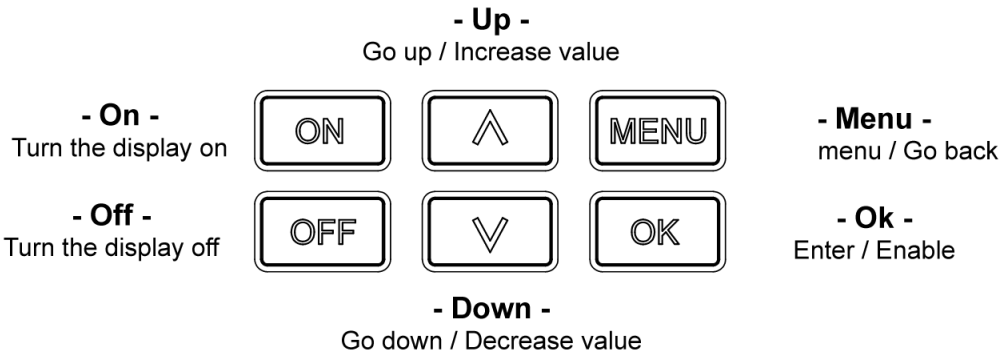
3. Connect the power supply and ground (red and black wires) to the battery terminals or an auxiliary 12 V power source.

4. Connect the G3 Display cable to the Lithium Battery and G3 Charger/Inverter.

Output 2 and 3 (Purple and Grey wires) are available for output to secondary components such as: LED lights or an alarm system. For a guide on how to setup the outputs for secondary components see Figure 2

For instructions on how to mount and connect battery and G3 inverter or inverter/charger please see G3 and Lithium Battery manual.

Keyboard



Menu and usage

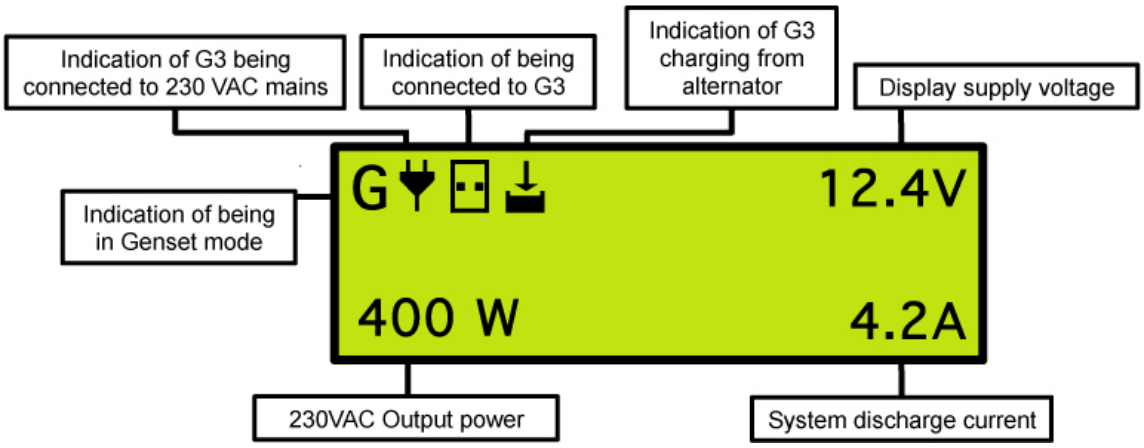
Turn display [ON] - The default home screen will appear.

Home screen

The display has one or three home screens to choose between depending on there being a Lithium battery or Lead battery in the system. In a Lithium system there are three different home screens. In a Lead system only one home screen is available.

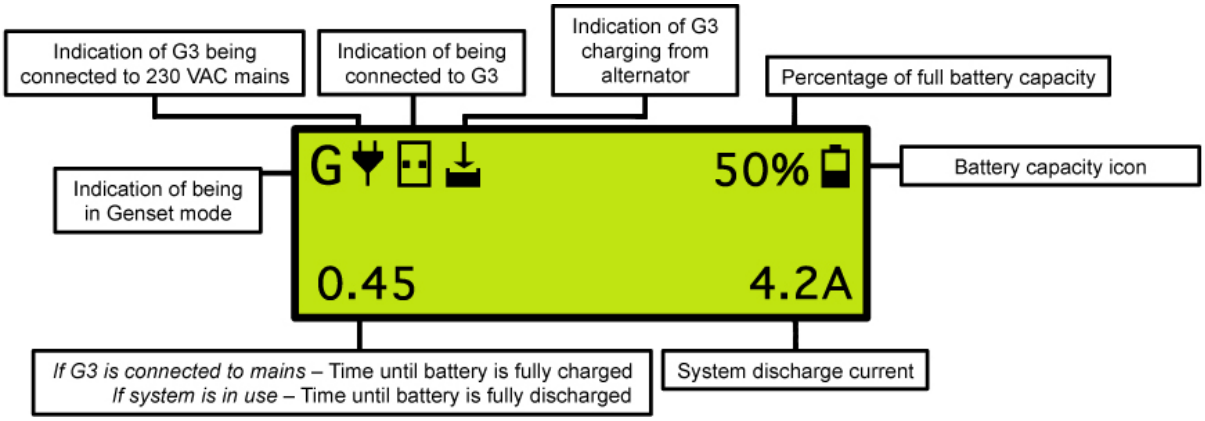
Lead-acid system:

Default home screen



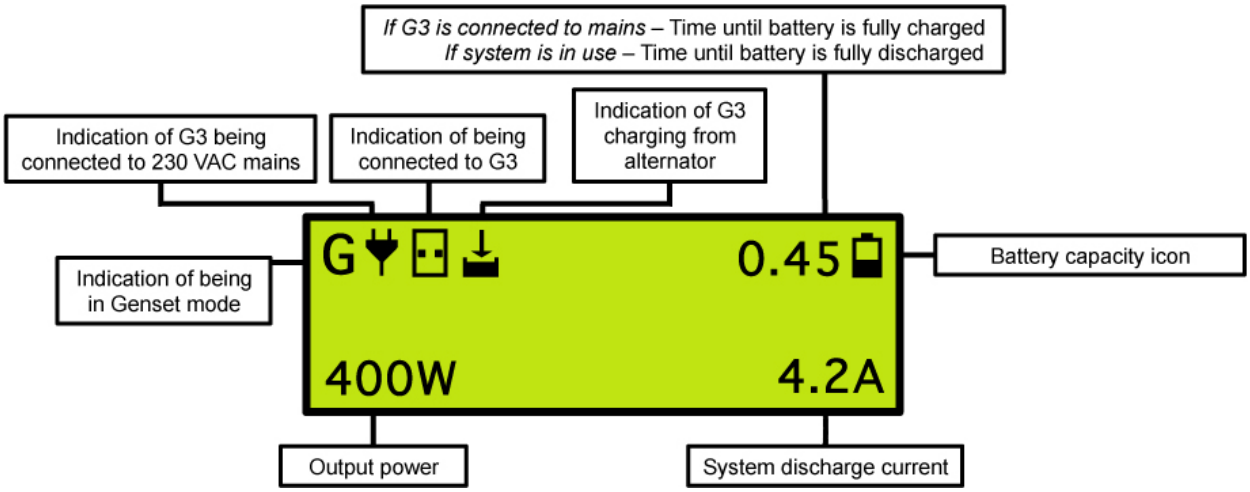
Lithium system:

Default home screen

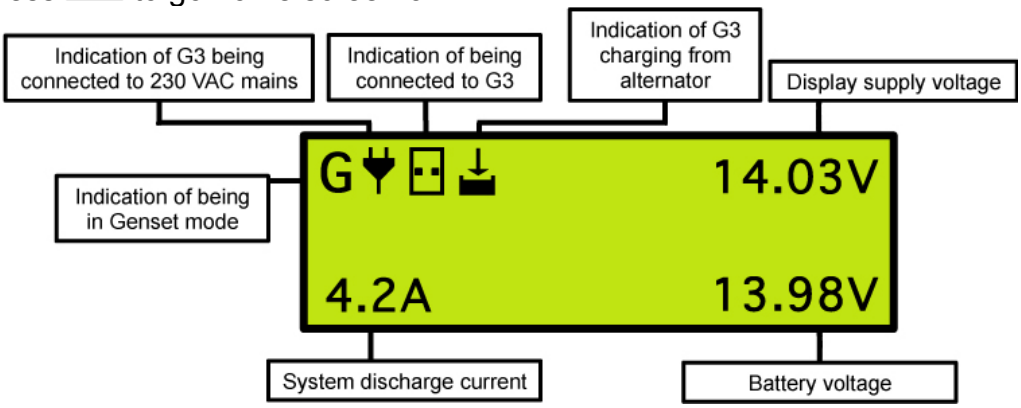

Indication of G3 being connected to 230 VAC mains
Indication of being connected to G3
Indication of G3 charging from alternator
Percentage of full battery capacity
Indication of being in Genset mode
G
50%
Battery capacity icon
0.45
4.2A
If G3 is connected to mains – Time until battery is fully charged
If system is in use – Time until battery is fully discharged
System discharge current

Press [V] to go home screen 2:

Home screen 2


If G3 is connected to mains – Time until battery is fully charged
If system is in use – Time until battery is fully discharged
Indication of G3 being connected to 230 VAC mains
Indication of being connected to G3
Indication of G3 charging from alternator
Indication of being in Genset mode
G
0.45
Battery capacity icon
400W
4.2A
Output power
System discharge current

Press [V] to go home screen 3:



Settings and information

Menu index

For any system information and settings enter MENU, following will appear

1. Display settings
   - 1.1. Output 2
     - 1.1.1. Out 2 Trigger – under voltage
     - 1.1.2. Out 2 Trigger – Over voltage
     - 1.1.3. Out 2 Trigger – Under SOC
     - 1.1.4. Out 2 Trigger – Over SOC
     - 1.1.5. Out 2 Reset – Under voltage
     - 1.1.6. Out 2 Reset – Over voltage
     - 1.1.7. Out 2 Reset – Under SOC
     - 1.1.8. Out 2 Reset – Over SOC
     - 1.1.9. Manual Cont.
   - 1.2. Output 3
     - 1.2.1. Out 3 Trigger – under voltage
     - 1.2.2. Out 3 Trigger – Over voltage
     - 1.2.3. Out 3 Trigger – Under SOC
     - 1.2.4. Out 3 Trigger – Over SOC
     - 1.2.5. Out 3 Reset – Under voltage
     - 1.2.6. Out 3 Reset – Over voltage
     - 1.2.7. Out 3 Reset – Under SOC
     - 1.2.8. Out 3 Reset – Over SOC
     - 1.2.9. Manual Cont.
   - 1.3. Gen-set – Mode
   - 1.4. Temp. Control
   - 1.5. Display Version

2. Lith. Batt. Settings
   - 2.1. Version Lith. Batt.
   - 2.2. View cell voltage
   - 2.3. View temperature

3. Combi xxxx-xx
   - 3.1. Status
   - 3.2. Boost charge
   - 3.3. Firmware

G3 Display Menu Description

Display settings

1.1. Output 2 & 1.2. Output 3

For setting an output from output 2 and/or 3 a trigger threshold and reset threshold has to be made. By default all thresholds are off.

It is possible to trigger an output if certain system values get higher or lower than specific a value. The system values are either voltage, starting at 9.00V going to 32V, or State Of Charge (SOC), starting at 1% going to 100%.

When the output trigger is set, a reset threshold must also be set in order to deactivate the signal. The reset threshold can be set when the system values get higher or lower than a specific value. The system values are either voltage, starting at 9.00V going to 32V, or State Of Charge, starting at 1% going to 100%.

For a manual test of the signal the *1.1.9. / 1.2.9. Manual cont.* can be used.

Example:

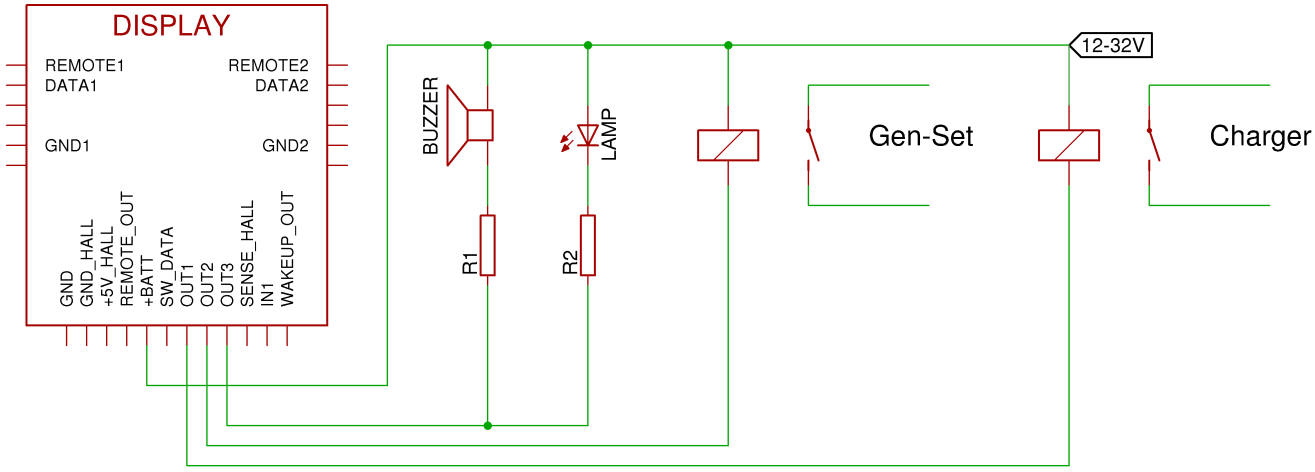


Figure 2 Example of using the outputs

It is possible to set a trigger that will activate output 2 or 3.

With the setup in Figure 2 the G3 Display can activate the Gen-Set if the SOC drops below a predefined level, for example 20%.

If the Gen-Set fails, for whatever reason, and the SOC drops below a critical level, for example 10%, output 3 can be activated sounding an alarm that will alert the user of the situation.

1.3. Gen-set – Mode

Gen-set mode is mostly used when there is lead–acid batteries in the system. The Gen-set function makes it possible to automatically start a generator when the battery is discharged to a preset voltage, for example 11,5 V, and stop it again when the battery reaches a preset voltage, for example 13,2 V. A timer can also be set to stop the generator.

The Gen-set feature is disabled by default. Press OK to enable gen-set mode.

Depending on the Gen-Set interface, Figure 3 shows one way of connecting a Gen-Set to the G3 Display.

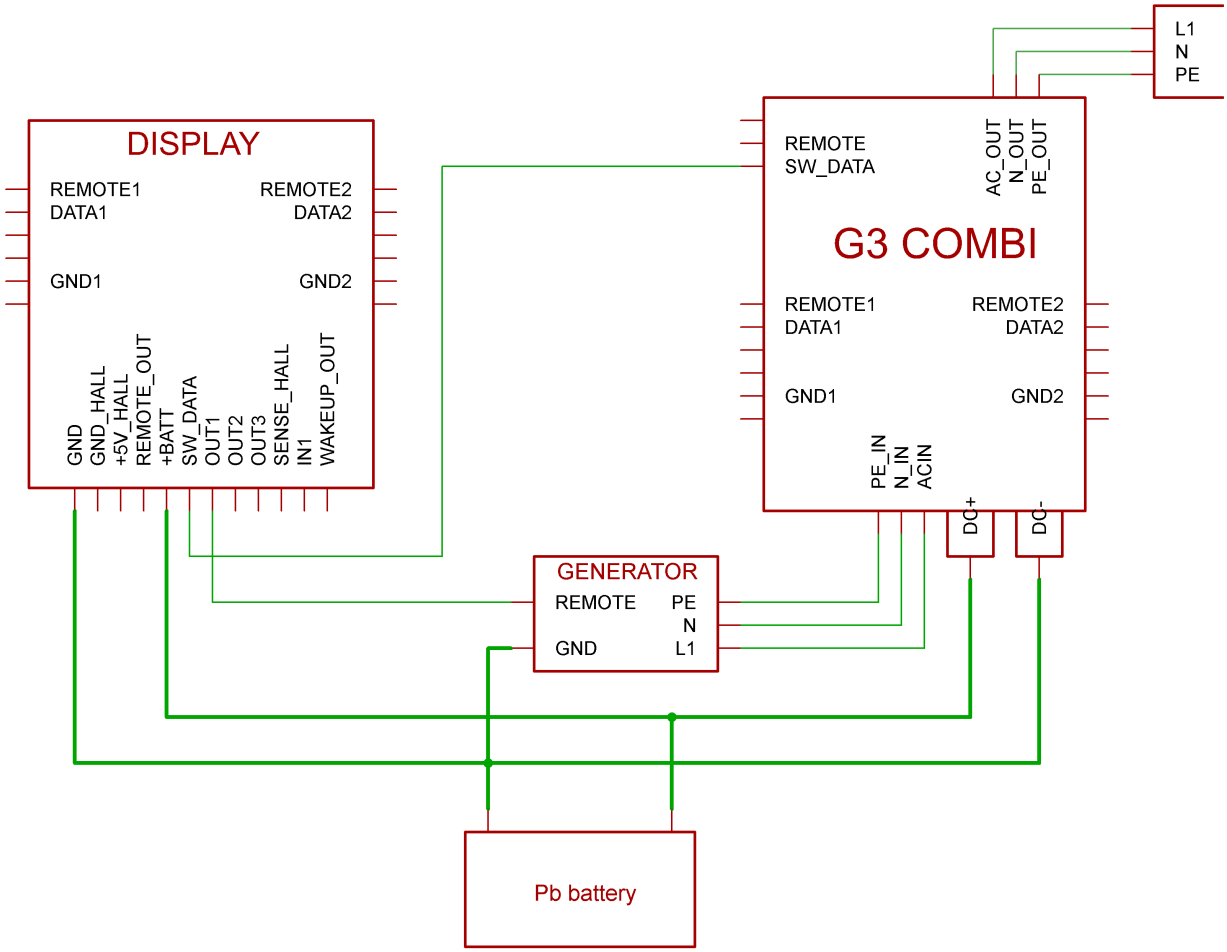


Figure 3 Gen-Set mode

1.5. Display version

Enter to see the current software (SW) and hardware (HW) versions of the G3 display.

Lithium battery settings

2.1. Version Lith. Batt.
Enter to view firmware vesion of lithium battery.

2.2. View cell voltage
Enter to view voltage of all cells.

2.3. View temperature
Enter to view temperature of the battery cells.

Combi xxxx.xx
3.1. Status
Will display *Charging* if the system is charging or *Inverting* if the system is in use.

3.2. Boost charge - *Only for flooded lead - acid cells. DO NOT USE WITH GEL OR AGM BATTERIES.*
Press [OK] to activate boost charge – Repeat to deactivate
During normal charge the Combi charges the battery with a 14.4 voltage, but when boost charge is activated, the Combi raises the charging voltage to 15.4V. The boost charge mode function is automatically disabled when the 230VAC mains grid is removed or the battery is fully charged, making the Combi return to the normal charging voltage. The function is only to be used on flooded lead acid cells periodically to desulfate the cells. This function should not be used on GEL or AGM batteries!

3.3. Firmware
Enter to view firmware version of G3 combi.

Technical specifications

G3 Display – General information

G3 Display - General information	
Operating voltage	10,2 - 32 VDC
Absolute Voltage rating	8-35 VDC
Normal mode Consumption (@12VDC)	70 mA
Sleep mode Consumption	<5 mA
Operating Temperature	-20°C to 55°C
Storage Temperature	-40°C to 55°C
Dimensions	137 x 43,8 x 88 mm
Weight	285g
Housing	Aluminium case
Connector J1	Molex 39-28-1123
Connector J4 & J5	Molex 95003-2661

Connectors Pin-out and Location

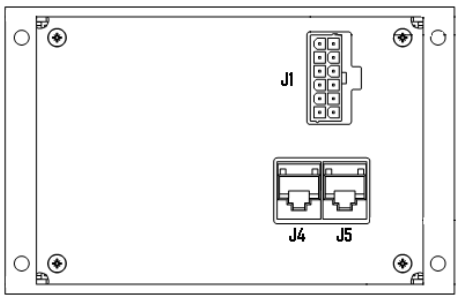
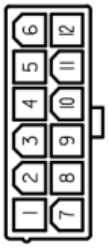


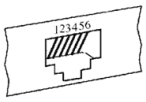
Figure 4: Location of connectors on rear panel of G3 Display

J1



Pin	Signal	Description
1	GND	Supply ground (- BATTERY)
2	GND HALL	Hall sensor ground
3	+5V HALL	Hall sensor supply
4	REMOTE OUT	Remote control of G3
5	+BATTERY	Supply voltage (+ BATTERY)
6	DATA	Single Wire Data communication
7	OUT_1	Output #1 – Generator remote control
8	OUT_2	Output #2
9	OUT_3	Output #3
10	SNS HALL	Hall sensor output
11	INPUT_1	Input #1
12	WAKEUP OUT	

Mating connector type is MOLEX 0039012125

J4, J5	Pin	Signal	Description
	1	-TEMPX1	N/A for Display
	2	GND_TELE	User's GND (Fused)
	3	+TEMPX1	N/A for Display
	4	SYNC_IN/OU	N/A for Display
	5	T	Single Wire Data
	6	DATA	communication
		REMOTE OUT	Remote control of G3

Mating connector type is MOLEX 0900750031
Connectors J4 and J5 are connected in parallel.

G3 display inputs

Input pin 1 & 2	
Input voltage absolute max	32 VDC
"High" level input voltage	>9 VDC
"Low" level input voltage	<4 VDC
Input Impedance	1.8K
Transient protection	By internal diode

Output 1 – 3

Output 1 – 3	
Output Topology	Open Collector
Absolute voltage rating	48 VDC
Max sink current	170 mA
Transient protection	By internal diode

Remote output

Remote Output	
Source Voltage	12 VDC
Max Source Current	50 mA
Output Impedance	100 Ω
Transient protection	By internal diode

Single wire communication

Single Wire Communication	
Output Voltage	12 VDC
Max source current (limited)	450 mA
Internal pull up resistor	1K
Fuse rating	500mAT
Transient protection	By internal diode
Communication Topology	Simplex USART (0-12v)
Communication Speed	9600 baud
Communication protocol	Clayton Power Single Wire rev2.1D

Warranty

CAUTION & WARNING:
DO NOT USE OR ATTEMPT TO USE THIS PRODUCT UNTIL YOU HAVE READ THIS USER'S MANUAL IN ITS ENTIRETY. IMPROPER INSTALLATION OR USAGE OF THIS DEVICE MAY BE HAZARDOUS AND MAY CAUSE DAMAGE TO OTHER ELECTRICAL EQUIPMENT AND WILL VOID WARRANTY.

- Clayton Power warrants, to the original purchaser only, for a period of 24 months from the date of purchase, that the Clayton Power device will be in good working order when properly installed and operated as described in this manual.

- If the display fails within this time period under normal use, Clayton Power will, without charge, at the place of Clayton Power's choosing, repair or replace the display - with new or reconditioned parts or a new or reconditioned display as Clayton Power deems necessary.

This warranty is void and will not be applied if:

- The inverter has been used against the recommendations of this manual.
- The inverter has been used in an application outside of general automotive, solar, industrial or marine applications without the agreement of Clayton Power.
- The inverter has been modified or repaired without written authorization of Clayton Power.
- Reverse polarity, excessive overloading, general abuse, neglect, wear & tear, ingress of liquids (water, oil, acid, or otherwise), foreign objects, lightening strikes, over or under voltage, RFI/EMI, etc.

Obtaining Warranty Service
To obtain warranty service, please contact the outlet at which you purchased your product. Do not contact Clayton Power directly. For warranty service you will require the following:

1. Proof of purchase
2. Model number
3. Serial number
4. Brief description of application and problem Telephone your Clayton Power dealer for an authorization number prior to dispatch - do not send without authorization. Once this number has been obtained, please carefully package your display and send (freight paid) to the Clayton Power dealer.

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CE mark

CE-Declaration of Conformity

The following product

006-00001GF G3 Display

Fully complies with the guidelines of the directive 2004/108/EG, based on the following standards:

DIN EN 61204-3:2000

DIN EN 55011:2009 + A1:2010; DIN EN 55022:2006 + A1:2007; DIN EN 55024:2010

DIN EN 61000-4-2:2009; DIN EN 61000-4-3:2008; DIN EN 61000-4-4:2010; DIN EN 61000-4-5:2007; DIN EN 61000-4-6:2009

Odense, 18.01.2013

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